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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/542,133	07/12/2005	Mark Thomas Johnson	NL 030017	8899

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BRIARCLIFF MANOR, NY 10510

EXAMINER

PINKNEY, DAWAYNE

ART UNIT	PAPER NUMBER
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2873

MAIL DATE	DELIVERY MODE
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06/07/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

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Office Action Summary

Application No.

10/542,133

Applicant(s)

JOHNSON ET AL.

Examiner

DaWayne A. Pinkney

Art Unit

2873

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 July 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7 and 9-21 is/are rejected.
- 7) ☒ Claim(s) 8 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 July 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>07/12/2005 and 05/09/2007</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Information Disclosure Statement

The information disclosure statement (IDS) submitted on 07/12/2005 was considered by the examiner.

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

2. Claims 1-2, 10-11, 15-17 and 20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The usage of the phrase "types of particles" renders the claims indefinite. For examination purposes, the phrase "types of particles" is interpreted to mean three different colored particles, all having different mobilities.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1-3, 9, 13-16 and 18-21 are rejected under 35 U.S.C. 102(e) as being anticipated by De Boer et al. (US 2003/0038772).

The applied reference has a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

Regarding **claim 1**, De Boer discloses, an electrophoretic display (1) with a pixel (10) (Paragraph 0001, lines 1-5) comprising:

a reservoir volume (RV) (Paragraph 0035, lines 7, 12-15 and 18 of Fig. 3) and an image volume (PV) (Paragraph 0035, lines 4-6 and 16 of Fig. 3),

different types of particles (Pa, Pb, Pc) having different colors and different electrophoretic mobilities (Paragraph 0011, lines 1-5, Paragraph 0014, lines 1-5 and Paragraph 0036, lines 8-11), wherein the particles (Pa, Pb, Pc) determine a visible color of the pixel (10) when present in the image volume (IV) (Paragraph 0003, lines 1-6 and Paragraph 0009, lines 1-14), and wherein the particles (Pa, Pb, Pc) do not contribute to the visible color of the pixel (10) when present in the reservoir volume (RV) (Paragraph 0046, lines 13-23),

select electrodes (SE1, SE2) for generating in the reservoir volume (RV) a select electric field (SF) for separating the different types of particles (Pa, Pb, Pc) in different sub-volumes (SVa, SVb, SVc) in the reservoir volume (RV) (Paragraph 0038, lines 1-8, Paragraph 0039, lines 18, Paragraph 0045, lines 1-9 and 12 and 13 of Fig. 3), and

at least one fill electrode (FE1, FE2) for generating a fill electric field (FF) to move the different types of particles (Pa, Pb, Pc) from the sub-volumes (SVa, SVb, SVc) into the image volume (IV) (Paragraph 0037, lines 1-5, Paragraph 0040, lines 1-10 and 14 of Fig. 3).

Regarding **claim 2**, De Boer discloses, an electrophoretic display (1) as claimed in claim 1, wherein the at least one fill electrode (FE1, FE2) is positioned to obtain the fill electric field (FF) directed for simultaneously moving the different types of particles (Pa, Pb, Pc) from the sub-volumes (SVa, SVb, SVc) into the image volume (IV) (Paragraph 0009, lines 1-14 and Paragraph 0036, lines 2-11).

Regarding **claim 3**, De Boer discloses, an electrophoretic display (1) as claimed in claim 1, wherein the fill electrodes (FE2) comprise sub fill electrodes (FE2a, FE2b, FE2c) associated with the different sub-volumes (SVa, SVb, SVc) for generating the fill electric field (FF) to comprise sub fill electric fields (FFa, FFb, FFc) in the different sub-volumes (SVa, SVb, SVc) (Paragraph 0002, lines 1-4).

Regarding **claim 9**, De Boer discloses, an electrophoretic display (1) as claimed in claim 6, wherein the further fill electrode (CF) is positioned with respect to the sub-volumes (SVa, SVb, SVc) to obtain a fill electric field which is higher for the particles (Pa) having a slower electrophoretic mobility than for the particles having a higher electrophoretic mobility (Paragraph 0036, lines 8-11 and Paragraph 0059, lines 1-21).

Regarding **claim 13**, De Boer discloses, an electrophoretic display as claimed in claim 1, further comprising reset means (SE1) for removing the particles (Pa, Pb, Pc) from the image volume (IV) to store the particles (Pa, Pb, Pc) in a store volume (SV) in the reservoir volume (RV) (Paragraph 0012, lines 1-8 and Paragraph 0037, lines 1-5).

Regarding **claim 14**, De Boer discloses, an electrophoretic display as claimed in claim 13, wherein the reset means (SE1) comprise one of the select electrodes (SE1) for attracting the particles (Pa, Pb, Pc) in the image volume (IV) towards the store volume (RV) adjacent to the one of the select electrodes (SE1) (Paragraph 0037, lines 1-5).

Regarding **claim 15**, De Boer discloses, an electrophoretic display as claimed in claim 1, wherein the mobility of the different types of particles (Pa, Pb, Pc) has a predetermined ratio (Paragraph 0036, lines 8-11), and wherein a movement path of the particles (Pa, Pb, Pc) in the reservoir volume has a length to enable the particles (Pa, Pb, Pc) to be separated in the sub-volumes (SVa, SVb, SVc) which are substantially non-overlapping (Paragraph 0038, lines 1-8 and Paragraph 0039, lines 1-18).

Regarding **claim 16**, De Boer discloses, an electrophoretic display as claimed in claim 15, wherein the different types of particles (Pa, Pb, Pc) comprise a first, second and third type of particles all being charged in the same polarity (Paragraph 0035, lines 8-10), and having different mobilities (Paragraph 0036, lines 8-11).

Regarding **claim 18**, De Boer discloses, an electrophoretic display as claimed in claim 1, wherein the pixel comprises a reset electrode (RE) to attract the particles (Pa, Pb, Pc) during a reset phase wherein the particles (Pa, Pb, Pc) have to be moved into a store volume (SV) in the reservoir volume (RV) (Paragraph 0012, lines 1-8 and Paragraph 0037, lines 1-5).

Regarding **claim 19**, De Boer discloses, an electrophoretic display as claimed in claim 18, wherein the reset electrode (RE) is associated with the center of the image volume (IV) (Paragraph 0012, lines 1-8, Paragraph 0037, lines 1-5 and 14 of Fig. 3), and wherein the electrophoretic display further comprises a processor (3) (inherent) for successively supplying a

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voltage to the reset electrode to attract the particles (Pa, Pb, Pc) towards the center of the image volume (IV) and a voltage to one of the select electrodes (SE1) being associated with the store volume (SV) to attract the particles (Pa, Pb, Pc) to move into the store volume (SV) (Paragraph 0012, lines 1-8 and Paragraph 0037, lines 1-5).

Regarding **claim 20**, De Boer discloses, a method of driving an electrophoretic display (1) with a pixel (10) (Paragraph 0032, lines 1-7 and Paragraph 0034, lines 1-14), the electrophoretic display (Paragraph 0001, lines 1-5) comprising:

a reservoir volume (RV) (Paragraph 0035, lines 7, 12-15 and 18 of Fig. 3) and an image volume (PV) (Paragraph 0035, lines 4-6 and 16 of Fig. 3),

different types of particles (Pa, Pb, Pc) having different colors and different electrophoretic mobilities (Paragraph 0011, lines 1-5, Paragraph 0014, lines 1-5 and Paragraph 0036, lines 8-11), wherein the particles (Pa, Pb, Pc) determine a visible color of the pixel (10) when present in the image volume (IV) (Paragraph 0003, lines 1-6 and Paragraph 0009, lines 1-14), and wherein the particles (Pa, Pb, Pc) do not contribute to the visible color of the pixel (10) when present in the reservoir volume (RV) (Paragraph 0046, lines 13-23), the method comprising:

generating (SE1, SE2) in the reservoir volume (RV) a select electric field (SF) for separating the different types of particles (Pa, Pb, Pc) in different sub-volumes (SVa, SVb, SVc) in the reservoir volume (RV) (Paragraph 0038, lines 1-8, Paragraph 0039, lines 18, Paragraph 0045, lines 1-9 and 12 and 13 of Fig. 3), and

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generating (FE1, FE2) a fill electric field (FF) to move the different types of particles (Pa, Pb, Pc) from the sub-volumes (SVa, SVb, SVc) into the image volume (IV) (Paragraph 0037, lines 1-5, Paragraph 0040, lines 1-10 and 14 of Fig. 3).

Regarding **claim 21**, De Boer discloses, a display apparatus comprising an electrophoretic display as claimed in claim 1 (Paragraph 0004, lines 1-4).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. Claims 4-7 and 12 are rejected under 35 U.S.C. 103(a) as being obvious over De Boer et al. (US 2003/0038772) as applied to claim 3, further in view of Gordon, II et al. (US 2002/0171619).

The applied reference has a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C.

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102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). This rejection might also be overcome by showing that the reference is disqualified under 35 U.S.C. 103(c) as prior art in a rejection under 35 U.S.C. 103(a). See MPEP § 706.02(l)(1) and § 706.02(l)(2).

The cited primary reference, De Boer, remains as applied to **claim 3 above**.

Furthermore, the cited primary reference teaches, the sub electric fields (FFa, FFb, FFc) extend in a direction (x) (14 of Fig. 3).

The cited primary reference does not teach that select electrodes produce a select electric field (SF), which extends in a direction (y) different from the direction of the sub electric fields.

The added secondary reference, Gordon teaches, electrodes, which produce an electric field that extends in a direction (y) different from the direction of the sub electric fields (Paragraph 0081, lines 1-3 and 8a and 20 a of Fig. 1) for the benefit of this causes the particles to occupy substantially no horizontal area in the pixel, which allows light to pass through the pixel without significantly interacting with the particles (Paragraph 0087, lines 3-5).

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It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the electrodes of Gordon with the display of De Boer because the electrodes of Gordon causes the particles to occupy substantially no horizontal area in the pixel, which allows light to pass through the pixel without significantly interacting with the particles (Paragraph 0087, lines 3-5).

Regarding **claim 5**, De Boer discloses, an electrophoretic display (1) as claimed in claim 4, wherein the reservoir volume comprises shielding electrodes (FE1a, FE1b) for substantially shielding in the first direction (y) the sub fill electric fields (FFa, FFb, FFc) of the different sub-volumes (SV1, SV2, SV3) from each other (Paragraph 0045, lines 1-18).

Regarding **claim 6**, De Boer discloses, that it is conventional for the upper substrate of the display (15 of Fig. 3) to contain electrodes (Paragraph 0005, lines 6-16 and Paragraph 0009, lines 1-12). Therefore, De Boer teaches, an electrophoretic display (1) as claimed in claim 4, wherein the pixel (10) comprises a further fill electrode (CF) arranged in the image volume (IV) in the second direction further away from the reservoir volume (RV) than the sub fill electrodes (FE2a, FE2b, FE2c) for attracting the particles (Pa, Pb, Pc) leaving the sub-volumes (SVa, SVb, SVc) further into the image volume (IV) (Paragraph 0005, lines 6-16, Paragraph 0009, lines 1-12 and 15 of Fig. 3).

Regarding **claim 7**, De Boer discloses, that it is conventional for the upper substrate of the display (15 of Fig. 3) to contain electrodes (Paragraph 0005, lines 6-16 and Paragraph 0009, lines 1-12). Therefore, De Boer teaches, an electrophoretic display (1) as claimed in claim 6, wherein the further fill electrode (CF) is positioned in the second direction (x) at a border of the

image volume (IV) at a maximal distance from the reservoir volume (RV) (Paragraph 0005, lines 6-16, Paragraph 0009, lines 1-12 and 15 of Fig. 3).

Regarding **claim 12**, De Boer teaches, the image volume (IV) is box shaped (Paragraph 0035, lines 4-6 and 16 of Fig. 3) and the fill electrodes (FE1, FE2) being arranged for generating the fill electric field (FF) in a second direction (x) substantially perpendicular to the first direction (y) (Paragraph 0037, lines 1-5, Paragraph 0040, lines 1-10 and 14 of Fig. 3).

Furthermore, Gordon teaches, electrodes, which produce an electric field that extends in a direction (y) different from the direction of the sub electric fields (Paragraph 0081, lines 1-3 and 8a and 20 a of Fig. 1).

8. Claim 17 is rejected under 35 U.S.C. 103(a) as being obvious over De Boer et al. (US 2003/0038772) as applied claim 15 above, further in view of Groner (US 3, 976, 485).

The applied reference has a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in

accordance with 37 CFR 1.321(c). This rejection might also be overcome by showing that the reference is disqualified under 35 U.S.C. 103(c) as prior art in a rejection under 35 U.S.C. 103(a). See MPEP § 706.02(I)(1) and § 706.02(I)(2).

The cited primary reference, De Boer, remains as applied to **claim 15 above**.

The cited primary reference does not teach the different types of particles (Pa, Pb, Pc) comprise a first and a second type of particles both being charged in the same polarity and having different mobilities and a third type of particles being charged oppositely.

The added secondary reference, Groner teaches, a display with different types of particles (Pa, Pb, Pc) comprise a first and a second type of particles both being charged in the same polarity and having different mobilities and a third type of particles being charged oppositely (Column 4, lines 17-19 and Figs. 4a-4c) for the benefit of improved image density (Column 52, line 34).

Allowable Subject Matter

9. Claim 8 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

10. The following is a statement of reasons for the indication of allowable subject matter:

The prior art does not teach or suggest an electrophoretic display in which the further fill electrode (CF) is positioned in the second direction (x) within the image volume (IV) but at less than the maximal distance from the reservoir volume (RV).

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Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following disclosures substantially teach an electrophoretic display with a reservoir volume and an image volume, with select electrodes and fill electrodes.

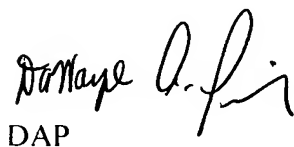
Feenstra et al. (US 2005/0213014)

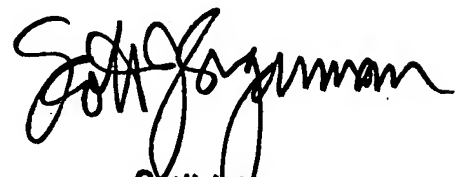
Schlagen (US 7, 034, 987)

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DaWayne A. Pinkney whose telephone number is (571) 270-1305. The examiner can normally be reached on Monday-Thurs. 8 a.m. - 4:30 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky Mack can be reached on (571) 272-2333. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


DAP


Scott J. Sugarman
Primary Examiner